

**WHAT IS CLAIMED IS:**

1. A trace-following powered amplifier, comprising: a signal sampling circuit, a power supply, and an amplifier, wherein said signal sampling circuit is provided for sampling a peak-value from a signal which is obtained from a signal output end of a test instrument and sending the sampled signal to an input end of said power supply, said power supply is provided between said signal sampling circuit and said amplifier while provides a trace-following voltage signal having a tolerance after sampling to said amplifier; and an amplifier is provided for changing its output signal following an output amplitude feedback, thus a voltage supplied signal from said power supply is controlled to be equivalent to the peak-value of signal of said amplifier plus an estimated tolerance so as to make most efficient use of electrical energy and to make best use of power.
2. The trace following powered amplifier as set forth in claim 1, in which the output signal of the power supply is subject to voltage multiplication and rectification through a transformer before sending a power source to one terminal of a transistor, it then changes an amplitude of voltage outputted from the other terminal of the transistor via the variation of a control signal outputted from a comparator.
3. The trace following powered amplifier as set forth in claim 1, in which said amplifier performs rectification/filtering processing on the output signal thereof and then feedbacks the processed output signal to an A/D converter when the output signal changed, while said A/D converter emit a variable control signal to change the output of said comparator once receiving said signal and the detection of change on the signal.